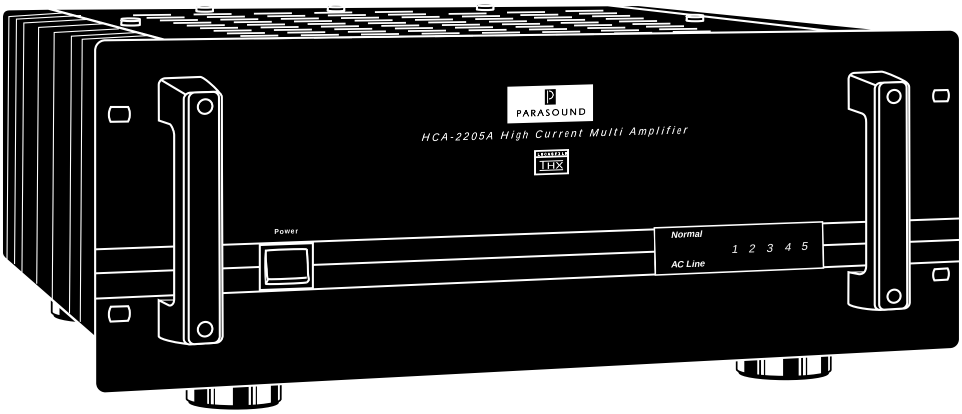
O W N E R ' S   M A N U A L

PARASOUND

HCA-2205A Five Channel High Current Power Amplifier



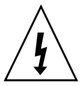
LUCASFIL

THX®

Table of Contents

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IMPORTANT SAFETY INSTRUCTIONS



The lightning flash with the arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of “dangerous voltage” inside the product that may constitute a risk of electric shock.

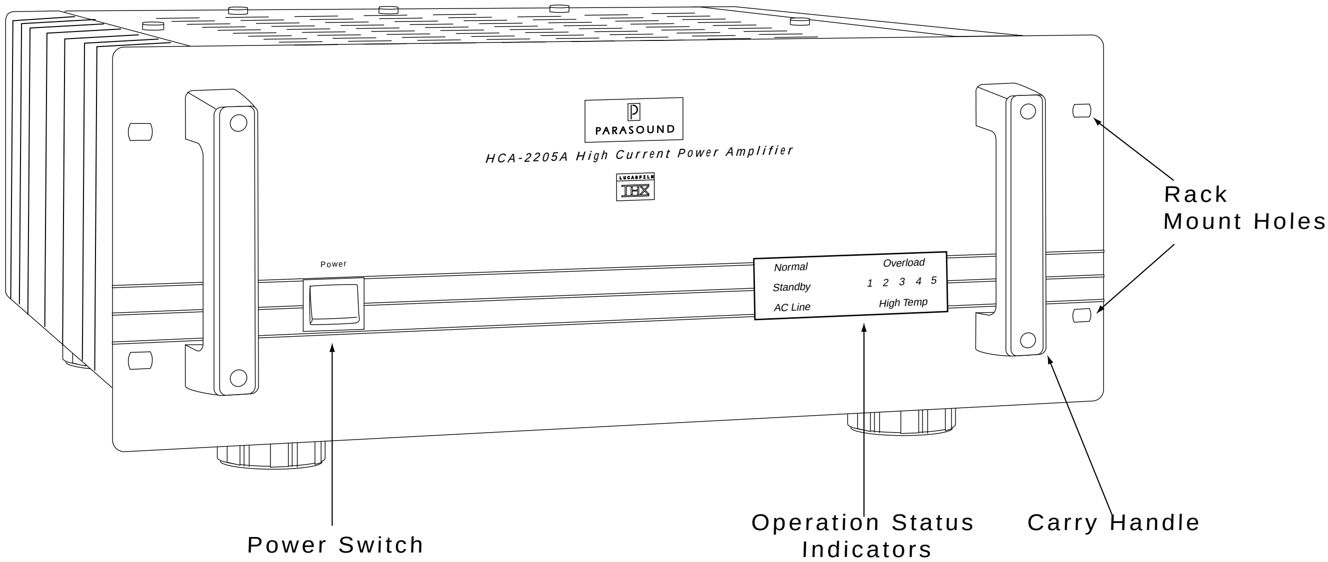


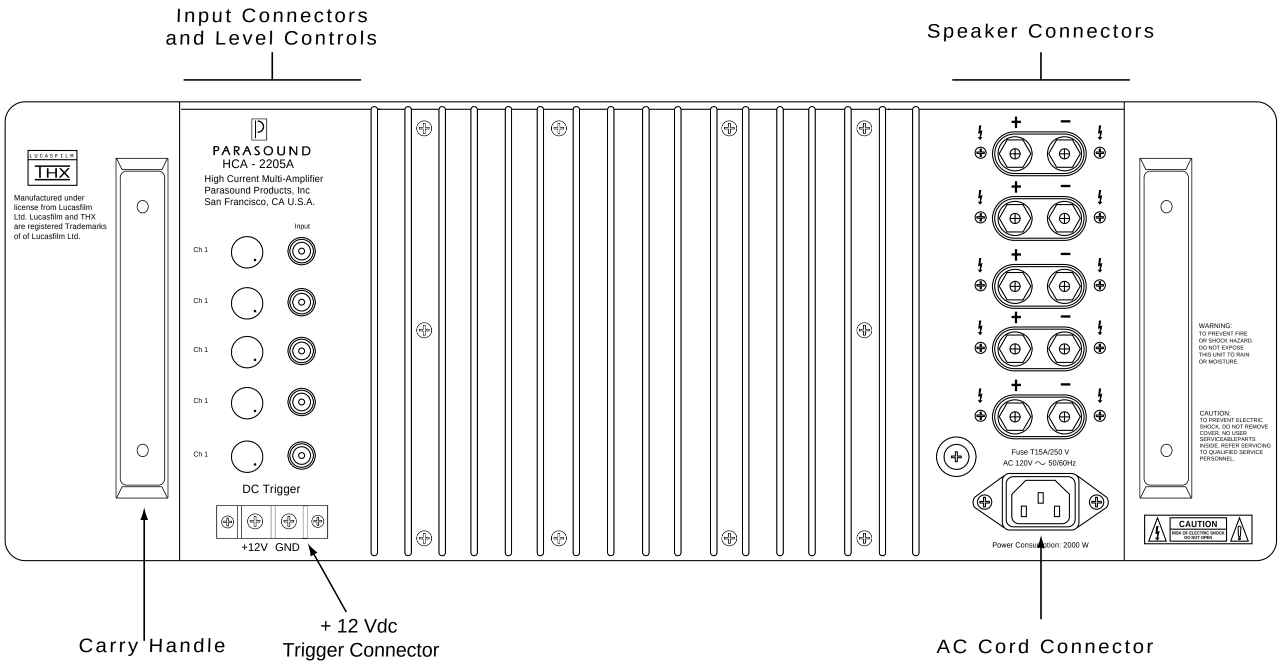
The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the product.

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL

1. **Read Instructions** — Read all the safety and operating instructions before operating this product.
2. **Retain Instructions** — Retain safety and operating instructions for future reference.
3. **Heed Warnings** — Adhere to all warnings on the product and in the operating instructions.
4. **Follow Instructions** — Follow all operating and use instructions.
5. **Cleaning** — Unplug this product from the wall outlet before cleaning. Use a damp cloth for cleaning. Clean the outside of the product only.
6. **Attachments** — Do not use attachments that are not recommended by the product manufacturer; they may be hazardous.
7. **Water and Moisture** — Do not use this product near water.
8. **Accessories** — Do not place this product on an unstable cart or stand. The product may fall causing bodily injury and damage to the product. A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart to overturn.
9. **Ventilation** — Slots and openings in the cabinet are provided for ventilation to ensure reliable operation of the product and to protect it from overheating. These openings must not be blocked or covered. *This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided.*
10. **Power Sources** — Operate this product only from the type of power source indicated on the label. If you are not sure of the type of power supply to your home, consult your dealer or local power company. This product is equipped with a three-prong grounding plug. This plug will only fit into a grounding power outlet. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding plug.
11. **Power Cord Protection** — Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them.
12. **Lightning**— Unplug the unit from the wall outlet for added protection during a lightning storm and when it is left unattended and unused for long periods of time. This will prevent damage to the product due to lightning and power line surges.
13. **Overloading** — Do not overload wall outlets or extension cords. This can result in a fire or electric shock.
14. **Inserting Objects into Unit** - Never push objects of any kind into this product through any openings; they may touch dangerous voltage points or short out parts that could result in fire or electric shock.
15. **Servicing** — Do not attempt to repair or service this product yourself. Opening or removing covers may expose you to dangerous voltage and other hazards. Refer all servicing to qualified service personnel.
16. **Damage Requiring Service** — Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions: a) If the power-supply cord or plug is damaged. b) If liquid has been spilled into the product. c) If the product has been exposed to rain or water. d) If the product does not operate normally by following the operating instructions. e) If the product has been dropped or damaged in any way. f) If the product exhibits a distinct change in performance.
17. **Replacement Parts** — When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer. Unauthorized substitutions may result in fire, electric shock, and other hazards.
19. **Safety Check** — Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
20. **Wall or Ceiling Mounting** — Mount the product to a wall or ceiling only as recommended.
21. **Heat** — The product should be situated away from heat sources such as radiators, heat registers, stoves, and other products (including amplifiers) that produce heat.

Figure #1 HCA-2205A Front and Rear Panel Drawings





Introduction

Congratulations on your purchase of this precision audio component and thank you for your selection of Parasound. Your Parasound power amplifier was designed by renowned circuit designer John Curl to meet or surpass the stringent standards required by Lucasfilm for use in THX Home Cinema systems. Please take a few moments to read these instructions so that you may fully understand the capabilities of your new Parasound power amplifier.

Unpacking

Carefully unpack your amplifier and remove all the enclosed accessories. Be sure to inspect the unit for any possible shipping damage. If you see any, contact your Parasound Dealer immediately. Save all the packing material in case you need to ship the amplifier for repair. Before you proceed, find the serial number located on the rear panel of your amplifier and record it here for reference:

Serial #____________________ Date of Purchase____________________

Installation and Rack Mounting

Locate your amplifier away from heat sources such as air ducts and radiators. Always mount the amplifier horizontally and make sure that your cabinet or shelf can support its weight. It is best to provide a separate shelf for your amplifier rather that stacking it directly above or below your other components.

The HCA-2205A occupies four rack spaces (7") in a standard 19 inch equipment rack. Be sure to use heavy duty mounting bolts to and nylon shoulder washers on both sides of the faceplate to avoid scratching the amplifier’s front panel and also to help prevent ground loops. Contact Middle Atlantic Products at (201) 839-1011 to obtain any rack mounting hardware you may need. When rack mounting the HCA-2205A, have someone help support the unit while you bolt the component to the rack rails.

Ventilation Requirements

To insure safe and reliable operation, it is very important that the amplifier has *plenty of ventilation* to prevent overheating and automatic shut down from its thermal protection circuitry. Please observe the following ventilation guidelines when installing your amplifier in a cabinet or other enclosed area:

1) If you are not using a fan, allow *at least* six inches on each side and above the amplifier, and *do not* close off the front with a cabinet door or panel.

2) If you are enclosing the amplifier within an equipment cabinet, use a fan to draw in cool air and exhaust warm air. Two vent holes are required: one for intake and one for exhaust.

3) Do not place the amplifier on carpeting that will obstruct the air flow into the bottom of the amplifier chassis and heatsinks.

4) Avoid stacking components. If you do stack components, you *must* use a fan to circulate the warm air that will quickly become trapped between them when they are powered on.

Making Connections to the HCA-2205A

Refer to Figure #1

Leave the AC cord disconnected before making any signal or speaker connections. When making connections to the amplifier, make sure there is no strain or tension on the input leads, speaker wires, or AC cord that could cause them to pull loose.

Your HCA-2205A is designed to deliver the same power and sonic characteristics to the Left, Center, Right, and both Surround speakers of your home theater system. For additional low frequency response, we recommend that you install a powered subwoofer. Even though all the channels of the HCA-2205A operate identically, the input and output connectors are color coded to make it easier to identify each channel in case you ever need to troubleshoot your system.

Input Connections

〈 Connect the left front output of your processor to the White Channel 1 Input of your HCA-2205A
〈 Connect the right front output of your processor to the Red Channel 2 Input of your HCA-2205A
〈 Connect the center output of your processor to the Green Channel 3 Input of your HCA-2205A
〈 Connect the right surround output of your processor to Blue Channel 4 Input of your HCA-2205A
〈 Connect the left surround output of your processor to the Blue Channel 5 Input of your HCA-2205A
〈 Connect the subwoofer output of your processor to the input of your powered subwoofer.

Speaker Connections

You may connect bare wire up to AWG 12, speaker wire terminated with 1/4" spade lugs, or banana plugs to the five-way binding posts of your power amplifier. If you use bare wire without terminals, make sure you remove only enough insulation so the wire can fit through the hole that runs sideways through the terminal’s binding post. Before inserting the wire, twist all its strands tightly to prevent strays that could cause a short circuit. (You may want to "tin" the stripped wire with solder to prevent it from fraying and oxidizing.)

〈 Connect the HCA-2205's Channel 1 Speaker Output to your Left speaker
〈 Connect the HCA-2205's Channel 2 Speaker Output to your Right speaker
〈 Connect the HCA-2205's Channel 3 Speaker Output to your Center speaker
〈 Connect the HCA-2205's Channel 4 Speaker Output to your Left Surround speaker
〈 Connect the HCA-2205's Channel 5 Speaker Output to your Right Surround speaker

Minimum Speaker Impedance Precautions

Although the HCA-2205A is capable of driving speakers with occasional impedance dips below 2 Ω, it is primarily designed to drive loudspeakers with a 4 Ω or 8 Ω nominal impedance. This is because sustained high power operation into loads of less than 4 Ω may cause overheating and subsequent thermal shutdown.

Observing Correct Polarity

When you connect speakers to your amplifier, you will notice that one side of the two conductor speaker wire will have some sort of mark: either printing, a raised ridge on the insulation, or a different color of conductor to let you know which wire to connect to the positive and which to the negative speaker terminals so you can repeat the connection on the power amplifier's binding posts.

DC Trigger Connection

This connector provides the ability to trigger your amplifier on with an external DC voltage source ranging from + 9 Vdc to +12 Vdc. With the main power switch in the off (down) position, the amplifier can be turned on with voltage from any external DC source such as the +12 Vdc trigger from the Parasound P/SP-1500 AV Processor/Preamplifier. Since it is optically coupled, the DC trigger only requires 15 mA of current to activate the circuitry and turn on the amplifier.

AC Power Connections and AC Grounding

Before you connect the AC cord, make sure your amplifier's power switch is in the off position and the external DC trigger is off. If possible, plug your amplifier directly to an AC wall outlet. Do not connect the amplifier to the accessory AC outlet on your preamplifier or processor because the amplifier's current draw exceeds the ratings of most preamplifier’s power switches and power cords. If you use an external AC line conditioner or surge suppressor, make sure it can withstand the power requirements of the amplifier listed in the specification section of this manual.

Operating the HCA-2205A

Refer to Figure #1

Power Switch

Manual Turn On

Press the upper side to turn the unit on manually; press the lower side to turn the unit off.

Automatic Turn On

When the power switch is in the off position, the power amplifier can be turned on with an external DC voltage applied at the DC trigger connector on the rear panel. (see above)

Level Controls

Each channel has its own rear mounted "set and forget" input level control. Your amplifier will sound best with these level controls set to maximum, where they are effectively out of the audio signal path. However, if your preamplifier has very high gain, and its volume control cannot track properly for left-right channel balance near its minimum position, it may be necessary to reduce the input level control settings on the amplifier. When using the HCA-2205A in a THX installation, each level control *must* be set at maximum to correspond to 0 dB THX reference level.

AC Line Indicator

The AC line indicator on the front panel of your amplifier lights to show you that AC is present at the AC connector. This indicates that the AC cord is connected and that power is applied to the amplifier.

Standby/Normal Indicators

When you first turn the amplifier on, the Standby indicator will light for about five seconds while the internal circuits are stabilizing. After that, the Standby indicator turns off and the Normal indicator lights to signal that the amplifier is operational.

The Standby indicator will also light whenever there is a fault that triggers the protection circuitry. This may indicate one of the following conditions: DC present at the amplifier's input, a speaker impedance overload, a short circuited speaker line, or possible internal fault. If this indicator remains lit, remove power to the amplifier and check all connections. During this time, the protection circuits should automatically reset. If the Standby indicator stays lit after you reapply power, contact your Parasound Dealer, Installer or Parasound Technical Service for further advice.

Current Overload LEDs

These indicators let you know if you are exceeding the amplifier's power supply capacity. During normal operation, the bi-color operation indicators for channels 1-5 will be green and the Current Overload indicator will remain off. If any channel is driven beyond its maximum current capacity or the impedance for that channel is too low, the Current Overload indicator will light and affected channel's indicator will change from green to red.

High Temp Indicator

This indicator will light when any of the external heatsinks reach 90 degrees centigrade. If the High Temp indicator lights, it probably means that the amplifier has inadequate ventilation. Refer to page 4 for more information about proper ventilation. Once the heatsinks cool below 90 degrees, the amplifier will automatically reset.

Maintaining Your Parasound Amplifier

Your Parasound power amplifier requires no periodic maintenance and has no user serviceable parts inside. To avoid the risk of electric shock, do not remove the top cover. The amplifier's exterior can easily be cleaned with a soft cloth moistened only with a few drops of water or glass cleaner.

Main Power Fuse

There is an external fuse located within the AC receptacle that may blow as a result of an internal fault condition. This fuse protects the unit from possible damage to internal parts. *Never replace this fuse with a fuse of higher value than installed from the factory*. Substitution of a larger fuse may create serious stress and damage to internal parts and *will void your warranty*.

In Case of Trouble

If you suspect a problem with your amplifier, first turn the amp off and check all your connections. The trouble may be caused by another component or even a defective hookup cable. If you are hearing hum out of any of your speakers, turn off the amplifier and disconnect the inputs to it. If the hum goes away, it was probably be caused by your processor or one of the source components connected to it. Frequently hum in home theater systems is caused by a grounding problem with the cable TV system. Contact your cable provider if necessary to make sure the cable feed into your house is properly grounded. There are cable isolation devices available such as the Video Link #634 or the Mondial Magic specifically designed to cure this problem. In rack mounted systems, ground loops and hum can sometimes develop via the metal rack rails of the equipment rack. This problem can be solved with nylon shoulder washers available from Middle Atlantic Products (refer to rack mounting section of this manual).

If All Else Fails...

Call your Parasound dealer or Parasound Technical Service. We can suggest other diagnostic tests you can easily perform. If we determine that your amplifier should be returned to Parasound or an Authorized Parasound Warranty Center for inspection and possible servicing, call Parasound for the location of a warranty center near you. If you choose to send it to Parasound, contact us to obtain a Return Authorization (RA) number. You will be asked to repack the unit in its original packaging including the additional outer box for protection during transit. The Return Authorization number must be clearly marked on the outer carton only. You should ship the unit by UPS with adequate insurance and a copy of your purchase receipt to validate your ownership.

Units that arrive without your specific Return Authorization number, without a suitable shipping carton or with evidence of improper internal packing must be refused. We do not accept collect shipments. After repair under warranty, the unit will be returned to you via prepaid UPS. In the case of a non-warranty repair, contact us and we will advise you of the repair charges before you ship the unit to us. The same packing and Return Authorization number requirements apply.

Special Features for the Parasound HCA-2205A

- Designed by John Curl
- THX certified by Lucasfilm Ltd.
- Independent power supplies for each channel
- Modular circuit board layout
- Massive encapsulated 2 kVA toroid power transformer
- 30,000 uF power supply capacitance for each channel
- Multiple polystyrene film bypass capacitors in power supply
- Can be triggered on with an external DC source
- Cascode Class A input stages with matched J-FET pairs
- Hand-picked complementary transistors in high voltage driver stage
- 8 complementary pairs of 15 ampere 60 MHz output transistors per channel
- Output transistors direct-coupled to speakers without LRC networks
- DC servo direct-coupled audio circuits with 0.8 Hz rolloff
- High-bias Class A/AB operation
- Gold-plated metal structure RCA input jacks
- Multiple protection circuits, temperature sensors and silver-cadmium relay protection
- Glass epoxy circuit boards, double-sided for precision
- Hand made audiophile-grade AC power cord

Parasound HCA-2205A Specifications

Continuous Power Output
220 watts RMS x 5, 20 Hz-20 kHz, 8 Ω,
300 watts RMS x 5, 20 Hz-20 kHz, 4 Ω,

Current Capacity
60 amps peak per channel

Slew Rate
> 130 V/µsecond

Frequency Response
5 Hz-100 kHz, +0/-3 dB at 1 watt

Total Harmonic Distortion
< 0.03 % at full power; < 0.01 % typical levels

IM Distortion
< 0.03 %

TIM
Unmeasureable

Dynamic Headroom
> 1.5 dB

Interchannel Crosstalk
> 80 dB at 1 kHz
> 60 dB at 20 kHz

Input Impedance
33 kΩ

Input Sensitivity
1 V for 28.28 V; THX Reference Level; 1.5 V for full output

S/N Ratio
> 96 dB, THX Reference Level

Damping Factor
> 1000 at 20 Hz

Dimensions
19“ wide x 7“ high x 18“ deep (7 5/8” high with feet)

Power Consumption
1500 watts

Power Requirements
110 Vac-120 Vac

Parasound Limited Warranty (USA only)

Your Parasound amplifier is covered by a limited warranty against defects in materials and workmanship for a period of two years from date of purchase. This warranty is provided by the Parasound dealer where the unit was purchased. Warranty repair will be performed only when your purchase receipt is presented to validate your ownership, date of purchase and authorized status of the selling dealer. Defective parts will be repaired or replaced without charge by your authorized dealer's store or the location designated by your dealer that is authorized to service Parasound equipment. Additional information is available by calling or writing to the Service Manager, Parasound Products, Inc. at the address below. Charges for unauthorized service and transportation costs are not reimbursable under this warranty.

This warranty becomes void if the product has been damaged by alteration, misuse, accident or neglect. Alteration includes any removal, obscuration or defacement of its serial number. This warranty becomes void if the unit has been connected or operated contrary to printed instructions. Parasound assumes no liability for property damage or any other incidental or consequential damage whatsoever which may result from the failure of this product. Any and all warranties of merchantability and fitness implied by law are limited to the duration of this expressed warranty.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply.

This warranty gives the original purchaser specific legal and other rights which may vary state by state.

PARASOUND

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